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4. In these and other features the limestone shows marked resemblances to that observed in coral regions.

5. The conditions for the growth of reef-building corals were apparently present at the time of the deposition of the St. Louis Beds. That the *Lithostrotion canadense* and *L. proliferum* were reef-building corals seems quite probable, though scarcely susceptible of proof.

6. The presence of coral reefs along the shore-line during the St. Louis epoch would seem to account for the various peculiarities of structure and arrangement observed in this limestone.

Keokuk, Ia., March, 1890.

THE HISTORY OF GARDEN VEGETABLES.

BY E. L. STURTEVANT.

(Continued from p. 157, Vol. XXIV., 1890.)

PORTUGAL CABBAGE. *Brassica oleracea costata* D.C.

THIS cabbage is easily recognizable through the great expansion of the midribs and veins of the leaf, in some cases forming quite half of the leaf, and the midrib losing its identity in the multitude of radiating branching veins. In some plants the petioles are winged clear to the base. Nearly all the names applied to this form indicate its distribution, at least in late years, from Portugal, from whence it reached English gardens about 1821,[1] and in American gardens, under the name of Portugal Cabbage, about 1850.[2] It should be remarked, however, that a *Choux a la grosse cote* was in French gardens in 1612,[3] and in three varieties in 1824.[4]

[1] Hort. Soc. Trans., 1821, 12.

[2] Buist. Fam. Kitch. Gar., 1851.

[3] Le Jard. Solit., 1612, 158.

[4] L'Hort. Franc., 1824.

This cabbage varies in a direction parallel to that of the common cabbage, or has forms which can be classed with the kales, and the heading cabbages of at least two types.

The peculiarity of the ribs or veins occasionally appears among the variables from the seed of the common cabbage, whence atavism as the result of a cross can be reasonably inferred. As to the origin of this form, our opinion, at the present stage of our studies, must be largely speculative, but we may reasonably believe that it originated from a different form or a different set of hybridizations than did the common cabbage.

The names in English are *braganza, portugal* or *sea-kale cabbage*,[5] *large-ribbed cabbage*,[6] *large-ribbed borecole, tranxuda*,[7] *couve tronchuda;* in France, *choux a grosses cotes, chou tronchuda;* in Spain, *col de pezon, col tronchuda;* in Portugal, *couve tronchuda, couve mantiega, couve penca*.[8]

The synonymy appears to be:

Choux a le grosse cote. Le Jard. Solit., 1612.
Chou blond a grosses cotes. Bosc. Dict., 1789, 4, 43.
Brassica oleracea aceppala costata. D.C. Syst., 2, 584.
B. oleracea costata. D.C. Mem., 1821, 12.
Chou a grosse cotes. Vilm., 1883.

POT MARIGOLD. *Calendula officinalis* L.

The flowers are used in some culinary preparations, and for this purpose it is yet grown in some gardens. It has not been used to any great extent in modern times, and even in 1783 Bryant,[9] while noting its common occurrence in gardens, says that the flowers were formerly in high esteem, being gathered and dried to use in soups and pottage. It was in American gardens in 1806. The plant was described in nearly all the early botanies, and is mentioned by Albertus Magnus in the 13th century.

[5] Vilmorin. The Veg. Gard., 1885, 128.
[6] Booth. Treas. of Bot.
[7] Burr. Field and Gard. Veg., 1863, 273.
[8] Vilmorin. Les Pl. Pot., 1883, 126.
[9] Bryant. Fl. Diet., 1783, 146.

Pot marigold is called, in France, *sonci des jardins;* in Germany, *ringelblume;*[10] in Holland, *goudbloem;* in Italy and Spain, *calendula;* in Russia, *nogotki;*[11] in Arabia, *zobejbe;* by the Greeks at Constantinople, *chamobuoreta;*[12] in Hindustani, *gul-i-mariyam, phirki, genda;* in Bengali, *genda phul;* in Burma, *htat-ta-ya;* at Lahore, *adsrioon;* in Japan, *kin-sen-kwa.*[13]

POTATO. *Solanum tuberosum* L.

The varieties of the potato are now innumerable, and while of several distinct types of form and color, are all supposed to have been derived from a common wild progenitor. It is interesting to observe, therefore, that varieties were under culture in South America even before the discovery. In a vocabulary of a now extinct tribe, the Chibcha, who once occupied the region about the present Bogota, ten different varieties are identified, one of which, "black inside," has not as yet appeared in modern culture.[14] At the present time Vilmorin[15] makes an extremely artificial classification, as follows: 1, the round yellow varieties; 2, the long yellow varieties; 3, the variegated long yellow varieties; 4, the round red varieties; 5, the flat pink or red varieties; 6, the smooth long red varieties; 7, the notched long red varieties; 8, the violet colored and variegated varieties. The yellow and red varieties are mentioned by Bauhin[16] in 1596, "fusci vel atrorubentis," or literally, the tawny and the purple. In 1726 Townsend[17] mentions the white and the red in England, as does Bryant[18] in 1783. In 1785, Varlo[19] describes nine sorts, the white round, the red round, the large Irish white smooth, the

[10] Vilmorin. Les Pl. Pot., 551.

[11] McIntosh. Book of the Gard., II., 240.

[12] Forskal. Fl. Æg. Arab., CXX., XXXIII.

[13] Pickering. Ch. Hist., 550.

[14] Gramatica Vocabulario . . de la Lingua Chibcha, for Don E. Urichoechea, quoted in Gard. Chron., Dec. 4, 1886, 720.

[15] Vilmorin. The Veg. Gard., 1885, 443.

[16] Bauhin. Phytopin., 1596, 301.

[17] Townsend. Seedsman, 1726, 23.

[18] Bryant. Fl. Diet., 1783, 15.

[19] Varlo. Husbandry, 1785, II., 97.

large round red, the culgee, the early-wife, the white kidney, the bull's-eye red. In further description he says the Jerusalem is long and full of eyes, the culgee is red on one side, the early-wife does not blossom, and are of a light-red, and the toadback is nearly akin to the large Irish, the skin almost black, and rough like a russetting; the kidney is oblong, white with a yellowish cast. In 1806 McMahon [20] describes but one kind for American gardens, but in 1828 Fessenden says there are many varieties, and in 1832 Bridgeman says the varieties are very numerous. In 1848 nearly one hundred sorts were exhibited at the Massachusetts Horticultural Society in Boston. Decaisne and Naudin give the number of varieties in France in 1815 as sixty; in 1855 as four hundred and ninety-three, in 1862 as five hundred and twenty-eight.

We have grown a number of wild varieties of the potato at the New York Agricultural Experiment Station, including the *Solanum maglia.* One sort, which has not as yet been identified by us with its specific name, corresponds to the notched class of Vilmorin. The *maglia* corresponds to the round and oblong flattened forms; the *Jamesii* to the round form. The colors of these wild potatoes are said by some growers to include the white, the red, and the variegated. In their habits of growth the *maglia* forms its tubers deep under the ground, the *Jamesii* very much scattered and extending a long distance from the plant.

The synonymy of our types can include those described by Vilmorin, as follows, but I have not attempted to make it complete.

I. *Round yellow.* Vilm., 1885.
Round as a ball. Ger., 1597, 781; 1633, 927.
Solanum tuberosum. Blackw. Herb., 1773, pl. 523, b.
White round. Varlo, Husb., 1785, II., 97.

II. *Long yellow.* Vilm., 1885.
Ovall or egge fashion. Ger., 1597, 781; 1633, 927.
Oblonga. Bauh. Prod., 1671, 90. Matth., 1598, 757, cum ic.
Papas peruanorum. Clus. Rar., 1601, 2, 79, cum ic.

[20] McMahon. Am. Gard. Cal., 1806.

III. *Variegated l ng yellow.* Vilm., 1885.

IV. *Round red.* Vilm., 1885.
Pugni magnitudine. Matth., 1598, 757.
Red round. Varlo, Husb., 1785, II., 97.

V. *Flat pink or red.* Vilm., 1885.

VI. *Smooth long red.* Vilm., 1885.
?Solanum tuberosum. Blackw. Herb., 1773, pl. 523, b.

VII. *Notched long red.* Vilm., 1885.
?Membri virilis forma. Bauh. Prod., 1671, 90.

VIII. *Violet colored and variegated.*
?Atrorubens. Bauh. Phytopin., 1596, 301.
Toadback. Varlo, Husb., 1785, II., 97.
Solanum tuberosum tuberibus nigricantibus. Blackw. Herb., t. 586.

The figures I have seen, which seem to me to be referrable to the *maglia* species, are:

Batata virginiana sive virginianorum pappus. Ger., 1597, 781.
Solanum tuberosum esculentum. Matth., op., 1598, 758; Bauh. Prod., 1671, 89.
Arachidna theophrasti forte, Papas peruanorum. Clus. Rar., 1601, 2, 79.
Papas americanus. Swertius, Florelig., 1612, t. 28, fig. 4.

The potatoes which are now grown in this country were derived from several sources, from England, and of late years from Bogota [21] in 1847, from Chili [22] in 1850, etc.

Potatoes were grown in Virginia in 1609,[23] and are also mentioned in 1648 [24] and 1650.[25] In 1683 Worlidge [26] says potatoes are much used in Ireland and America, but their introduction into New England is said not to have been until 1719,[27] at Lon-

[21] Farmers' Library, 1847, 382.
[22] Trans. N.Y. Ag. Soc., 1850, 726; 1851, 367.
[23] A True Decl. of Va., 1610, 13.
[24] A Perf. Desc. of Va., 1649, 4.
[25] Virginia, by E. W., 1650, 48.
[26] Syst. Hort. By J. W. Gent., 1683, 187.
[27] Hort. Register, III., 214.

dondury, N. H., and at Salem, about 1762.[28] In 1779, however, potatoes were among the Indian foods destroyed by Gen. Sullivan[29] during his invasion into Western New York.

This plant has secured a wide distribution, and has been successfully cultivated throughout nearly the whole world. Its northern limits are in Norway, 71° 7′; in Russia, the Pinega River, 65°; Turukansk, 65°; Yakutsk, shores of the Okotsk Sea, Kamchatka, Kadjah Island, Sitka Island; Mackenzie River, 65°; Canada, Labrador, 58° 45′; Greenland.[30]

The modern names for the potato are: In France, *pomme de terre*, *parmentiere*, *tartauffe*, *tartufle*, etc.; in Germany, *kartoffle;* in Flanders and Holland, *aard appel;* in Denmark, *jordepeeren;* in Italy, *patata;* in Spain and Portugal, *patatas;* in Spanish America, *papa;*[31] in Norway, *potet;*[32] in India, *wvlaetee aloo;*[33] in Telinga, *alu-guddalu;* in Ceylon, *rata-innala;*[34] by the Malays, *ubi bungala;*[35] in China, at Pekin, *shan-yas-tou;* in southern China, *ho-lan-shu.*[36]

PUMPKIN. *Cucurbita* Sp.

See under squash.

PURSLANE. *Portulaca oleracea* L.

Common purslane is a weed of the garden, and has spread over nearly the whole world. Whether originally an American plant is in doubt, but certain it is that plants *called* purslane were seen by the early visitors to the American coast. The cultivated purslane differs from the wild in being erect, and Hooker found

[28] Felt's Annals of Salem, II., 146.

[29] Conover's Early Hist. of Geneva, 1880, 45.

[30] Bergman. *Nature*, Aug. 21, 1884, 392.

[31] Vilmorin. Les Pl. Pot., 478. For Germany, see Die Deutschen Volksnamen du Pflanzen. Pritzel and Jessen.

[32] Schubeler. Culturpf., 90.

[33] Speede. Ind. Handb. of Gard., 136.

[34] Birdwood. Veg. Prod. of Bomb., 174.

[35] Treas. of Bot., 1186.

[36] Bretschneider. On the Study, etc., 17.

in northwest India a variety with erect stalks.[37] The use of the purslane as a vegetable is noted in the Greek writers under the name *andrachne*, and by the Romans under this name and *portulaca*. In the 13th century Albertus Magnus[38] does not mention culture in gardens, and apparently refers to the wild form, "the stems extending over the soil." In 1536 Ruellius[39] describes the erect, green-leaved, cultivated form, as well as the wild procumbent form, and in this he is followed by many of the succeeding botanists. Three varieties are described,—the green, the golden, and the large-leaved golden. The golden varieties are not mentioned by Bauhin in his phytopinax, 1596, nor in his pinax, 1623, but are mentioned just as if a well-known variety in Le Jardinier Solitaire, 1612. The green variety is figured by nearly all the earlier botanists. The golden has the following synonymy:

Pourpier dore. Le Jard. Solit., 1612, 378; Tourn., 1719, 236; Vilm., 1883, 518.

Red or Golden. Quintyne, 1693, 199.

Portulaca sativa lutea sive aurea. Ray, 1688, 1039.

Golden purslane. Ray, 1688, 1039; Townsend, 1726, 19; Mawe, 1778; Burr, 1863, 392.

Purslane was formerly much more grown than at present; with Quintyne it was a vegetable for forcing. It is seldom seen in American gardens, but the spinage from the wild plant is occasionally served at table.

Purslane is called in France, *pourpier, porcelin, porcellane, porchailles;* in Germany, *portulak, kreusel;* in Flanders and Holland, *postelein, postelijn, porcelein;* in Denmark, *portulak;* in Italy, *porcellana;* in Spain, *verdolaga;* in Portugal, *beldroega;*[40] in Norway, *portulak;*[41] in Russia, *schrucha.*[42]

In Arabia, *brabra, chamile, doenneb el farras, ridjlet el farras;*[43]

[37] Hooker. Fl. Br.-Ind., I., 240, ex. D.C. Orig. Des. Pl. Cult., 70.

[38] Albertus Magnus. De Veg., Jessen ed., 1867, 548.

[39] Ruellius. De Nat. Stirp., 1536, 482.

[40] Vilmorin. Les Pl. Pot., 517.

[41] Schubeler. Culturpf., 109.

[42] Decandolle. Orig. Des Pl. Cult., 70.

[43] Forskal. Fl. Æg., Arab., CXII.

in Arabic, *rigleh*;[44] in Bengali, *moonya*, *buroloonia*;[45] in Burma, *myae-byet*;[46] in Ceylon, *genda-kola*;[45] in China, *ma chi hien*; in Cochinchina, *rau sam*;[47] at Constantinople, *glisrida*;[43] in Egypt, *baglae*, *ridjle*;[46] in India, *choolee*, *mooncha*, *moonea*, *khursa*, *khurfa*;[48] in Japan, *bakin*, *uma biju*, *siberi fiju*;[49] in Nubia, *segettemum*;[44] in Persia, *turuek*, *kherefeh*; in Sanscrit, *lonika*, *loonia*; in Tamil, *caril-keeray*, *puropoo-keeray*.[45]

QUINOA. *Chenopodium quinoa*, Willd.

This plant was grown as a cereal plant in the table-lands of New Grenada, Peru, and Chili, at the time of the discovery of America, and De Vega[50] notes that both the Indians and the Spaniards use the foliage as a spinach, as well as the grain. In Chili a variety is named by Molina,[51] which yields a white grain, and this is the kind that is used as a vegetable in European gardens. A black-seeded variety, cultivated in gardens, is mentioned by Feuille[55] in Peru, preceding 1725. It was introduced in 1785,[52] but has not received very extended use. In 1853 seeds from France were distributed from the U. S. Patent Office.

The *white quinoa* is called in France, *anserine quinoa blanc*, *quinoa blanc*; in Germany, *peruanischer reis-spinat*, *reis-gewachs*;[53] in Peru, *quinua* by the Indians, *mujo* by the Spaniards;[50] in Chili, the white sort, *dahue*;[51] in Bolivia, *quinua*.[54]

RADISH. *Raphanus sativus* L.

In European culture the radish is grown for its roots, but in other countries it is grown as well for its leaves and seed. Thus

[44] Delile. Fl. Æg. Ill.

[45] Birdwood. Veg. Prod. of Bomb., 38, 161.

[46] Pickering. Ch. Hist., 611.

[47] Louriero. Fl. Cochinch., 293.

[48] Speede. Ind. Handb. of Gard., 171.

[49] Kaempfer. Amoen., 831.

[50] G. de Vega. Royal Com. Hak. Soc., ed. II., 358.

[51] Molina. Hist. of Chili, I., 91.

[52] Heuze. Les Pl. Alim., II., 259.

[53] Vilmorin. Les Pl. Pot., 1883, 10.

[54] Gibbon. Amazon, 139.

[55] Feuille. Peru, III., Ap. 16, t. X.

in Sikh, India, Edgeworth [56] says the radish is cultivated both as a vegetable made of the young buds, and for its oil. In Arabia Forskal [57] says the foliage and not the root is eaten. The Arabs are very fond of the tops of radishes, says Bayard Taylor,[58] and eat them with as much relish as donkeys. Klunzinger [59] describes the radish of Upper Egypt as of a peculiar kind, of which as a rule the leaves only, and not the small sharp root, are eaten. In 1726, in England,[60] radishes were sown for cutting in the first leaf for small salads. The oil-bearing radish of China is grown extensively there for the seeds, from which an edible oil is expressed, and it has been introduced and successfully cultivated in Italy, whence it has reached France.[61] This esculent root has been known from a remote antiquity, and has furnished a number of forms which have remained distinct from time immemorial. If the figures given by Woenig [62] as of the radish in the XII. dynasty of Egypt be the radish, we may recognize the turnip-rooted and the long. A. P. Decandolle [63] in 1821 divided the radishes into two divisions, the one including the common European sorts, the other the large black or white winter sorts. As a matter of convenience we will treat the various forms as species, giving the history of each.

I. *Raphanus radicula* Pers.[64]

This is the round or turnip radish, the root swollen into a spherical form, or an oval tube rounding at the extremity to a filiform radicle. It has several shades of color, from white to red or purple. Its savor is usually milder than that of the other

[56] Edgeworth. Hooker's Jour. of Bot., II., 273.

[57] Forskal. Fl. Æg.-Arab., XCIII.

[58] Bayard Taylor. Central Africa, 105.

[59] Klunzinger. Upper Egypt, 142.

[60] Townsend. Seedsman, 1726, 17.

[61] Bon Jard., 1882, 699.

[62] Woenig. Die Pflanzen in Alt Ægypt, 1886, 217.

[63] Decandolle. Mem. upon the Brassicæ, 1821.

[64] Baillon. Hist. of Plants, III., 222.

sorts. It seems to be the *Boeotion* of Theophrastus,[65] who described this form as the least acid, and of a rotund figure, and with small leaves; the *Syriacan* of Columella [66] and of Pliny.[67] This sort does not appear to have received extensive distribution northward during the middle ages, as they find but little mention in the earlier botanies. In 1586 Lyte [68] says they are not very common in Brabant; but they are figured in two varieties by Gerarde. I am disposed to put here the *Raphanus vulgaris* of Tragus, 1552, which he describes as round, small, and common in Germany. Bontius [69] in 1658 mentions them in Java, and in 1837 Bojer [70] describes them as grown at the Mauritius. In 1842 Speede [71] gives an India name, *gol moolee*, for the red and white kinds.

Raphanus orbiculatus. Round radish. Ger., 1597, 184.
Scarlet French Turnip. Vilm., 1885, 485.
Small Early White Turnip. Vilm., 1885, 487.
Radicula sativa minor. Small garden radish. Ger., 1597, 183.
White olive-shaped. Vilm., 1885, 490.
Olive-shaped Scarlet. Vilm., 1885, 488.

Raphanus sativus Mill.[72]

The root of this class is long, nearly cylindrical, diminishing insensibly to a point at the extremity. It is now the common garden radish. It has a variety of colors from the white to the red, and is noteworthy from the transparency of the flesh. It may well be the *radicula* of Columella,[73] and the *Algidense* of Pliny,[74] which he describes as having a long and translucent root. It is

[65] Theophrastus, Lib. VII., c. 4.
[66] Columella, Lib. X., c. 114; Lib. XI., c. 3.
[67] Pliny, Lib. XIX., c. 26.
[68] Lyte. Dodoens, 1586, 687.
[69] Bontius. Ind. Orient., 1658, 12.
[70] Bojer. Hort. Maur., 1837, 16.
[71] Speede. Ind. Handb. of Gard., 1842, 147.
[72] Baillon. Hist. of Pl., III., 222.
[73] Columella, Lib. IV., c. 8; Lib. XI., c. 2.
[74] Pliny, Lib. XIX., c. 26.

not described in England by Lyte nor by Gerarde; it is described as in the gardens of Aleppo in 1573–5.[75] In 1658 Bontius[69] calls them in Java *Dutch radish;* in 1837 Bojer[70] names them in the Mauritius, and in 1842 Speede[71] gives an Indian name, *lumbee moolee.*

Raphanus minor purpureus. Lob. Obs., 1576, 99; ic., 1591, I., 201.

Raphanus longus. Cam. Epit., 1586, 224.

Raphanus purpureus minor. Lobel., Lugd., 1587, 636.

Radicula sativa minor. Dod., 1616, 676.

Raphanus corynthia. Bodaeus, 1644, 769.

Long Scarlet. Vilm., 1885, 490.

Long White Vienna. Vilm., 1885, 492.

Raphanus albus longus.

The long white late and large radishes I do not recognize in the ancient writings, unless it be the reference by Pliny[74] to the size; some radishes, he says, are the size of a boy infant, and Dalechamp[76] says that such can be seen in his day in Thuringia and Erfordia. In Japan, so says Kizo Tamari,[77] a Japanese commissioner to the New Orleans Exposition of 1886, the radishes are mostly cylindrical, fusiform or club-shaped, from one-fourth of an inch to over a foot in diameter, from six inches to over a yard in length, and J. Morrow[78] says that at Lew Chew radishes often grow between two and three feet long, and more than twelve inches in circumference. In 1604 Acosta[79] writes that he had seen in the Indies "redish rootes as bigge as a man's arme, very tender and of good taste." These radishes are probably mentioned by Albertus Magnus[80] in the 13th century, who says that the *radix* are very large roots of a pyramidal figure, with a somewhat sharp savor, but not that of *raphanus;* they are planted in

[75] Gronovius. Orient., 81.

[76] Hist. Gen., Lugd., 1587, 634.

[77] Am. Hort., Sept., 1886, 9.

[78] Morrow. Perry's Japan, II., 16.

[79] Acosta. Hist. of the Ind., 1604, 261.

[80] Albertus Magnus. De Veg., Jessen Ed., 1867, 556, 645.

gardens. They seem to have been the principal kind in northern Europe a few centuries later, and are said by Lyte[81] in 1586 to be the common radish of England. In 1790 Loureiro[82] describes them as cultivated in China and Cochin China, and they seem to be the form described by Kaempfer[83] in Japan, in 1712. The radishes figured by the early botanists enable us to connect very closely with modern varieties.

(*a.*)
Raphanus longus. Trag., 1552, 732.
Raphanus. Matth., 1558, 241; 1570, 332.
Raphanus sive radix. Pin., 1561, 145.
Raphanus magnus. Lob. Obs., 1576, 99; ic., 1591, I., 201.
Raphanus alba. Cam. Epit., 1586, 223.
Raphanus sativus Matthiol. Lugd., 1587, 635.
Raphanus sive radicula sativa. Dod., 1616, 676.
White Strasbourg. Vilm., 1885, 494
(*b.*)
Raphanus II. Matth., 1570, 332; 1598, 349.
Raphanus secundus Matthiol. Lugd., 1587, 635.
Laon long gray Winter. Vilm., 1885, 496.
(*c.*)
Raphanus. Matth., 1558, 241; 1570, 332.
Raphanus sive radix. Pin., 1561, 145.
Raphanus sativus matthiolus. Lugd., 1587, 635.
Radice. Cast. Dur., 1617, 383.
White Spanish Winter. Vilm., 1885, 497.
(*d.*)
Raphanus sativus. Garden Radish. Ger., 1597, 183.
Large White Russian. Vilm., 1885, 497.

Raphanus niger vulgaris A. P. DC.

This radish does not seem to have been mentioned by the ancients. In 1586 Lyte says, The radish with a black root has

[81] Lyte. Dodoens, 1586, 687.
[82] Loureiro. Fl. Cochin Ch.; 1790, 396.
[83] Kaempfer. Amoen., 1712, 822.

PLATE XII.



From "Garden and Forest."

Taxodium distichum.

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of late years been brought into England, and now beginnith to be common.

Raphanus nigra. Cam. epit., 1586, 223.
Raphanus sive radicula sativa nigra. Dod., 1616, 676.
Raffano longo. Cast. Dur., 1617, ap.
Long-rooted Black Spanish. Bryant, 1783, 40.
Long Black Spanish Winter. Vilm., 1885, 496.

Raphanus niger rotundus A. P. DC.

This is a turnip-rooted or round form of a black radish, usually included among winter sorts.

Raphanus pyriformis. Ger., 1597, 184.
Raphanus I. Matth., 1598, 349.
Large Purple Winter. Vilm., 1885, 495.

There is another form of black radish figured in the early botanies, of quite a distinct appearance. It answers suggestively to the description by Vilmorin of the Radis de Mahon, a long red radish, exceedingly distinct, growing in part above ground, and peculiar to some districts in southern France and to the Balearic isles. I connect it with diffidence with the following:

Raphanus niger. Lob. ic., 1591, I., 202.
Radice selvatica. Cast. Dur., 1617, 384.
Raphanus niger. Bod., 1644, 770.
Radis de Mahon. Vilm., 1885, 499.

Theophrastus mentions the Corinthian sort as having full foliage, and the root, unlike other radishes, growing partly out of the earth, but the Long Normandy answers to this description as well as the Mahon.

The radish was known to Turner[84] in England in 1536 under the name of *radyce.* It was noted in Mexico in the sixteenth century by Peter Martyr,[85] by Benzoni[86] in Hayti in 1565, and was under cultivation in Massachusetts about 1629.[87]

[84] Turner. Libellus, 1537.
[85] Peter Martyr. Eden's Hist. of Trav., 1577.
[86] Benzoni. Hist. of the New World. Smyth Trans., 1857.
[86] Wood. New Eng. Prosp., 1st Ed., II.
[87] Vilmorin. Les Pl. Pot., 518.

The radish is called in France, *radis, petite rave, rave ;*ni Germany, *radies ;* in Flanders and Holland, *radijs ;* in Denmark, *haveroeddike ;* in Italy, *ravanello, radice ;* in Spain, *rabanito ;* in Portugal, *rabao, rabanite ;*[87] in Norway, *reddik ;*[88] in Greece, *rapania.*[89]

In Arabic, *figl,*[90] *fioyl, bokel ;* in Bengal, *moola ;*[91] in Burma, *mung-la ;*[89] in Ceylon, *rabu ;*[91] in Egypt, *fidjel ;*[89] in Hindustani, *moola, muli ;*[91] in India, *moolee ;*[92] in Japan, *daikon ;* in Malay, *lobak ;* in Sanscrit, *mooluka ;* in Tamil, *moolinghie ;* in Telinga, *mullangi.*[91]

Raphanus caudatus L.

This radish has pods often a foot or more in length, and these find use as a vegetable. It became known to Linnæus in 1764 ;[93] it reached England from Java about 1816,[94] and was described by Burr [95] as an American kitchen plant in 1863. According to Firminger [96] the plant has but lately come into cultivation in India, and there bears pods often three feet in length. These pods make excellent pickles.

It was at first called in England *tree radish from Java,*[94] in India, *rat-tailed radish,*[96] the name it now holds in the United States ; by Burr,[95] in 1863, *Madras radish.*

There are a number of radishes now known whose type requires further study before presentation. Such are the Chinese winter radishes, whose roots are swollen more at the base than at the summit, the oil-bearing radish, etc. The first of these is in general cultivation in Japan.

[88] Schubeler. Culturpf., 107.

[89] Pickering. Ch. Hist., 473.

[90] Delile. Fl. Æg. Ill.

[91] Birdwood. Veg. Prod. of Bomb., 138.

[92] Speede. Ind. Handb. of Gard.. 147.

[93] Miller's Dict., 1807.

[94] Gard. Chron., 1866, 779.

[95] Burr. Field and Gard. Veg., 384.

[96] Firminger. Gard. in Ind., 140.

RAMPION. *Campanula rapunculus* L.

The roots and leaves of Rampion are eaten in salads. It is recorded as in gardens by Pena and Lobel [98] in 1570, and is figured by Tragus [97] in 1552, Lobel [99] in 1576, as well as by other writers of this period as an improved root. In 1726 Townsend [100] says it is but in few gardens in England, and Bryant [101] in 1783 says it is much cultivated in France, but in England is now little regarded. It is recorded in American gardens in 1806, 1819, 1821, etc. As late as 1877 an English writer says rampion is a desirable addition to winter salads.[102]

Rampion is called in France, *raiponce, baton de Jacob, cheveux d'eveque, petite raiponce de careme, pied-de-sauterelle, rampon, rave sauvage;* in Germany, *rapunzel;* in Flanders and Holland, *rapunsel;* in Italy, *raperonzolo, raponzolo;* in Spain, *reponche, raponchigo;* in Portugal, *rapunculo.*[103]

RED CABBAGE. *Brassica oleracea* (*capitata*) *rubra* L.

The first certain mention I find of this cabbage is in 1570, in Pena & Lobel's Adversaria,[104] and figures are given by Gerarde, 1597,[105] Matthiolus, 1598,[106] Dodonaeus, 1616,[107] and J. Bauhin, 1651.[108] These figures are all of the spherical headed type. In 1636,[109] Ray notices the variability in the colors upon which a number of our seedsmen's varieties are founded. The oblong or the pointed headed types which now occur, I cannot trace.

[97] Tragus. De Stirp., 1552, 725.
[98] Pena and Lobel. Adv., 1570, 130.
[99] Lobel. Obs., 1576, 178.
[100] Townsend, 1726, 23.
[101] Bryant. Fl. Diet, 1783, 27.
[102] E. Hobday. Cottage Gard., 1877, 113.
[103] Vilmorin. Les Pl. Pot., 537.
[104] Pena and Lobel. Adv., 1570, 91.
[105] Gerarde. Herbal., 1597, 246.
[106] Matthiolus. Ed. of 1598, 367.
[107] Dodonæus Pemgt., 1616, p. 621.
[108] J. Bauhin. Hist., 1651, II., 831.
[109] Ray. Hist. 1686, 795.

The solidity of the head and the perfectness of the form in this class of cabbage indicate long culture and a remote origin. In England they have never attained much standing for general use,[110] and as in this country are principally grown for pickling.

The *Red Cabbage* is called in France, *chou pommerouge;* in Germany, *rote kopfkohl;* in Italy, *cavalo rosso;* in Dutch, *rood kool;* in Spain, *berza colorado;* [111] in India, *lal kobee.*[112]

The synonymy seems to be as follows:

I.

Brassica convoluta and arcte occlusa rubro colore. Adv., 1570, 91.

B. Lacuturria. Lyte's Dod., 1586, 637.

B. Capitata rubra. Bauh. Phytopin., 1596, 176; Pin., 1623, III.; Ger. Herb., 1597, 246; J. Bauh., Hist., 1651, II., 831; Ray, Hist., 1686, 621.

B. rubra capitata. Dod. Pempt., 1616, 621.

Chou pomme rouge. Tourn., Inst., 1719, 219.

Red cabbage, spherical headed forms.

II.

Dark red early pointed headed. Vilm., Alb. de Cliches, 1885.

New Garfield Pickeler. Tillinghast Cat., 1884.

RHUBARB. *Rheum* sp.

The rhubarb as a vegetable is in more repute in American and English gardens than in France, and is now widely distributed and much grown in American gardens. It is, however, of recent introduction; the first of its kind being only known about 1608, and the first reference I find to its growth as a vegetable in England being in 1778, although its culture probably dates somewhat earlier. It appeared in American gardens before 1806, but in 1821 Cobbett says he had never seen it in America. In 1822,

[110] J. W. Gent. Syst. Hort., 1683, 203. Townsend. Seedsman, 1726, 27, etc.

[111] McIntosh. Book of the Gard., II., 116.

[112] Speede. Ind. Handb. of Gard., 114.

J. Lowell, in the Massachusetts Agricultural Repository, says that thirty years ago we were strangers to the rhubarb, which has now become an article of extensive culture. R. Manning, Secretary of the Massachusetts Horticultural Society, says that in 1844 it was acquiring that popularity which now renders it indispensable. In 1863 Burr describes ten varieties for American gardens. I am not sufficiently acquainted with this genus to refer our cultivated sorts to their proper species, but I cannot agree with Vilmorin in referring them all to one species, *Rheum hybridum*. I present the species, in order of introduction, to which our cultivated rhubarbs have been referred by authors.

Rheum rhaponticum L.

A native of Southern Siberia and the region of the Volga, it was introduced to Europe about 1608, and cultivated at Padua by Prosper Alpinus, and seeds from this source were planted by Parkinson in England about 1640 or before.[113] There is no reference, however, to its use as a vegetable by Alpinus[114] in 1627, nor by Ray[115] in 1686, although the latter refers to the acid stalks being more grateful than that of garden sorrel. In 1778, however, Mawe[116] says its young stalks in spring, being cut and peeled, are used for tarts. In 1806 M'Mahon[117] mentions it in American gardens, and says the footstalks are very frequently used, and much esteemed for tarts and pies. In 1733 Bryant[118] describes the footstalks as two feet long, and thicker than a man's finger at the base.

Rheum undulatum L.

To this species have been referred garden varieties with a red stalk. It is said to be a native of China, and introduced to Europe in 1734. It is mentioned in American seed catalogues of

[113] Pharmacographia, 1879, 500.

[114] Alpinus. De Exot., 1627, 188.

[115] Ray. Hist., 1686, 170.

[116] Mawe. Gard., 1778.

[117] M'Mahon. Am. Gard. Cal., 1806, 205.

[118] Bryant. Fl. Diet., 1783, 67.

1828. Decaisne and Naudin[119] say it is grown in gardens, but is not as esteemed as is the Victoria rhubarb. In 1840[120] *Buck's* and *Elford* rhubarb are referred to as originating from this species. In 1882, a variety called *Tartreum*[121] announced in France as new, and highly praised, is referred here.

Rheum palmatum L.

Its habitat ascribed to China neighboring to Tartary, it first reached Europe in 1763[122] or 1758.[120] The footstalks are much smaller than those of other kinds, hence it is not in general cultivation.[120] It is yet rare in France, although this species is superior in quality, as it is quite tender.[123]

Rheum compactum L.

A native of Tartary and China, it became first known in Europe in 1758. In the Bon Jardinier of 1882 it is said to be the species principally grown in France as a vegetable, but Vilmorin[124] refers his varieties to *Rheum hybridum*, but these it is to be remarked are English.

Rheum hybridum L.

This is the species to which our largest and finest varieties are usually referred. It is of uncertain origin. It is first noticed in England in 1773 or 1774,[125] but it did not come into use as a culinary plant until about 1827. In 1829 a footstalk was noted as sixteen inches long.[126] The Victoria rhubarb of our gardens is referred to this species. In 1877 a stalk was exhibited at

[119] Decaisne & Naudin. Man., IV., 190.

[120] Vegetable Substances, 1840, 205.

[121] Bon. Jard., 1882, 565.

[122] Noisette. Man., 1826, 297.

[123] Bon Jard., 1882, 706.

[124] Vilmorin. Les. Pl. Pot., 1883, 538.

[125] Miller's Dict., 1807.

[126] Rhind. Veg. King., 1857, 309.

Boston which weighed 2 lbs. 2½ ozs., and in 1882, twelve stalks which weighed forty pounds.[127]

Rheum ribes L.

This plant is considered by Linnaeus[128] to be the *Ribes arebum* of Rauwolf, who traveled in the Orient in 1573-5, and who found it in the region of the Lebanon,[129] and its habitat is also given as Eastern Persia. Decaisne and Naudin[130] refer to it as grown in gardens in France, but not as esteemed as the *R. hybridum*, while the Bon Jardinier of 1882 says it is reported the best as an esculent, and is greatly praised.

Rheum australe, Don.

This species, which is the *R. emodi*, Wal., is said by Loudon[131] to have an excellent flavor, somewhat resembling that of apples, and excellent for a late crop, and the Bon Jardinier of 1882 says the petioles are longer and more esteemed than those of other species. On the contrary Burr[132] in 1863 says the leaf stalks, although attaining an immense size, are unfit for use on account of their purgative properties, but the plant is sometimes cultivated for its leaves, often a yard in diameter, which are useful for covering baskets containing vegetables or fruit.

The wild rhubarb about Cabul is blanched for use as a vegetable, and under the name of *rewash* is brought to the market. Gravel is piled about the sprout as it breaks from the earth, and by continuing the process the plant is forced to grow to the height of 18 or 20 inches. Another process is to cover the sprout with an earthen jar, and the sprout then curls itself spirally within the jar, and becomes quite white, crisp and free from fibre. It is eaten in its raw state with either salt or sugar, and makes a favorite preserve[133].

[127] Mass. Hort. Soc. Trans., 1887, III., 1882, 244.

[128] Linnaeus Sp., 2d ed., 532.

[129] Gronovius. Orient., 49.

[130] Decaisne & Naudin. Man., IV., 190.

[131] Loudon. Hort., 1860, 688.

[132] Burr. Field and Gard. Veg., 1863, 631.

[133] Harlan. U. S. Pat. Off. Rept., 1861, 528.

Rhubarb is called in France, *hubarbe;* in Germany, *rhabarber;* in Flanders and Holland, *rabarber;* in Denmark, *rhabarber;* in Italy, *rabarbaro, robarbaro;* in Spain and Portugal, *ruibarbo* [134].

ROCAMBOLE. *Allium sorodoprasum* L.

The culture of Rocambole is limited in this country, but in southern Europe the Genoese bring vast quantities to Provence under the name of *ail rouge* [135]. It is not of ancient culture, as it cannot be recognized in the plants of the ancient Greek and Roman authors, and finds no mention of garden cultivation by the early botanists. It is the Scorodoprasum II. of Clusius [136], 1601, the Allii genus, ophioscorodon dictum quibusdam, of J. Bauhin [137], 1651, but no indications of culture in either case. Ray [138], in 1688, does not refer to its cultivation in England. In 1726 however, Townsend [139] says it is "mightily in request"; in 1783 Bryant [140] classes it with edibles. In France, however, it was grown by Quintyne [141] in 1690. It is enumerated for American gardens in 1806 [142]. No varieties are mentioned.

Rocambole is called in France, *ail rocambole, ail rouge, ail d'Espane, eschalote d'Espagne, rocambole;* in Germany, *roccambol;* in Denmark *rokambol;* in Italy *aglio d'Indi;* In Portugal, *alho de Hespana.* [143] It 1698 in England it was called *Spanish-Garlick*, and in 1826 *rockambole.*

[134] Vilmorin. Les. Pl. Pot., 538.
[135] Bon Jard. 1882, 414.
[136] Clusius. Hist., 1601, 190.
[137] J. Bauhin. 1651, II., 559.
[138] Ray. Hist., 1688, II., 1120.
[139] Townsend. Seedsman, 1726, 25.
[140] Bryant. Fl. Diet, 1788, 23.
[141] Quintyne. Comp. Gard., 1704, 223.
[142] McMahon. Am. Gard. Cal., 1806, 190.
[143] Vilmorin. Les. Pl. Pot., 3.